REMARKS

Reconsideration of this application, as amended, is respectfully requested.

Initially, Applicants would like to thank the Examiner for the indication that claims 3-5 are allowed.

In the Official Action, the Examiner rejects claims 1, 2, and 6 under 35 U.S.C. § 103(a) as being unpatentable over the English Abstract of European Patent No. 1084785 (hereinafter "EP 1084785") or Japanese Patent No. 2001079749 (hereinafter "JP 2001079749").

In response, independent claims 1 and 6 have been amended to clarify their distinguishing features.

Regarding the iron component recited in claims 1 and 6 of the present application, of the components of the fragments of the abrasive material consisting essentially of ferric oxide, ferric oxide is reduced and the iron is dispersed into the body material. On page 2 of the Official Action, the Examiner argues "the prior art discloses a product substantially similar to the claimed product, differing only in the manner by which it is produced. Applicants respectfully disagree.

With regard to the iron component which has been subjected to a heat treatment at a temperature that causes iron to be "dispersed into the body material" as recited in claims 1 and 6 the present application, when examined under a scanning electric microscope (SEM) of a magnification of approximately 4000 to 5000 times, grain boundaries are observed in the surface. Thus, whether or not a heat treatment has been performed at a temperature that causes iron to be dispersed into the body material can be confirmed by observing the surface of the iron component through an SEM.

Moreover, because the abrasive material consisting essentially of ferric oxide unavoidably contains impurities, the iron component claimed in the present application can be distinguished from the others even after the heat treatment by detecting the impurities with energy dispersive X-ray (EDX) or an electric probe analyzer (EPMA).

More specifically, impurities such as MnO, etc, are contained in the fragments of the abrasive material essentially consisting of the ferric oxide (ferric oxide media), and the fragments are dispersed in the surface of the iron component. For example, in an example, of ferric oxide media, approximately 0.1% of MnO and approximately 0.03% of SiO_2 are contained. These impurities remain in the surface of the body material or in the body material even after the heat treatment.

The attached "REFERENCE FIGURE" shows the oxidation equilibrium relationships of metal oxides in an atmosphere of hydrogen (Bredzs, N. and C. C Tennenhouse. 1970. Metal-metal oxide-hydrogen atmosphere chart for brazing or bright metal processing. Welding Journal 49(5): 189). In the REFERENCE FIGURE, the horizontal axis represents temperature, and the vertical axis represents dew point. It can be seen from the figure that in order to reduce, for example, conventional alumina media consisting essentially of Al_2O_3, it is necessary to treat them with heat at the temperature of 1900°C, Al_2O_3 cannot be reduced. Consequently, Al_2O_3 remains stuck in the surface of such an iron component.

~~In contrast, FeO is more easily reduced than Al_2O_3, Cr_2O_3, MnO and SiO_2~~ when the dew points are the same. The same can be said for Fe_2O_3. In other words, even if ferric oxide contained in the fragments of the abrasive material consisting essentially of ferric oxide is reduced and the iron is dispersed into the body material, the impurities contained in

the fragments of the abrasive material remain in the body material. These impurities (Mn, SiO_2, etc.), which remain in the body material, can be detected, for example, by EDX or an EPMA.

Therefore, if grain boundaries are observed when the surface of an iron component is examined, for example, through an SEM, and the presence of such impurities is confirmed through EDX or an EPMA, it can be determined that the iron component is the iron component recited in claims 1 and 6 of the present application.

Turning now to the prior art, JP 20010797149 discloses that barrel-polishing of a component is performed using an abrasive material consisting essentially of alumina, silica and magnesia. After barrel-polishing, a heat deburring process in which burrs are burned instantaneously with burning gas, is carried out. Even if burrs are burned, the fragments of the abrasive material consisting essentially of alumina, silica and magnesia are not reduced, and remain stuck in the surface of the component. Moreover, grain boundaries will not be observed in the surface of the component.

On the other hand, EP 1084785 is a European application based on five Japanese patent applications, namely, Japanese Patent Application KOKAI Publication Nos. 2001-78397, 2001-78418, 2001-79749 and 2001-79750. These Japanese patent applications all use an abrasive material consisting essentially of alumina, silica and magnesia, as in the case of JP 2001079749 discussed above. Therefore, fragments of the abrasive remain stuck in the surface of the component.

Moreover, Japanese Patent Application KOKAI Publication No. 2001-78397 discloses that deburring using ultrasound is performed after barrel-polishing. Therefore, there is no possibility that grain boundaries will be observed and traces of impurities contained in

fragments of ferric oxide media remain like the iron component as recited in claims 1 and 6 of the present application.

Japanese Patent Application KOKAI Publication No. 2001-78398 discloses that a deburring process using a water jet and a chemical polishing process are carried out after barrel-polishing. In this case, there is no possibility that grain boundaries will be observed and traces of impurities contained in fragments of ferric oxide media remain like the iron components recited in claims 1 and 6 of the present application.

Japanese Patent Application KOAKI Publication No. 2001-78418 discloses that a fluid processing using abrasive grains is carried out after barrel-polishing. In this case, too, there is no possibility that grain boundaries will be observed and traces of impurities contained in fragments of ferric oxide media remain like the iron component as recited in claims 1 and 6 of the present application.

Japanese Patent Application KOKAI Publication No. 2001-79749 discloses that a heat deburring process, i.e., a process in which burrs are burned instantaneously with burning gas, is carried out after barrel-polishing, and in addition to the heat deburring process, a chemical polishing process is carried out. However, even if burrs are burned by instantaneous heating, the fragments of the abrasive material consisting essentially of alumina, silica and magnesia are not reduced and remain stuck in the surface of the component. Moreover, grain boundaries will not be observed in the surface of the component. In addition, even if a chemical polishing process is carried out, there is no possibility that grain boundaries will be observed and traces of fragments of ferric oxide media remain like the iron component as recited in claims 1 and 6 of the present application.

Japanese Patent Application KOKAI Publication No. 2001-79750 discloses that the same heat deburring process as the one mentioned above is performed after barrel polishing, and in addition to the heat deburring process, a magnetic polishing process is carried out. Even is such a magnetic polishing process is carried out, there is no possibility that grain boundaries will be observed and traces of fragments of ferric oxide media remain like the iron component as recited in claims 1 and 6 of the present application.

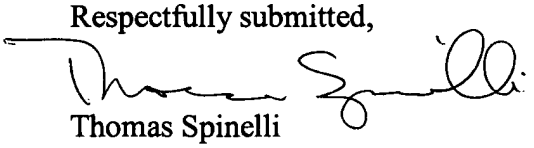
The components disclosed in these references can be distinguished from the iron component of the present application by observing for absence/presence of grain boundaries in their surfaces, for example, using an SEM, and by observing for traces of such impurities using an EPMA. Therefore, as explained above and contrary to the Examiner's argument that "the prior art discloses a product substantially similar to the claimed product, differing only in the manner by which it is produced," the iron component of the present application as recited in claims 1 and 6 clearly differs from the "products" disclosed in the references and results in an improved product as discussed in the present application.

Independent claims 1 and 6 have been amended to clarify the distinguishing features discussed above. The limitation "ferric oxide is reduced" as now recited in amended claim 6 is fully supported in the original disclosure, particularly at page 12, lines 5-12 and 23 and page 13, line 2 of the specification. The limitation "an oxide abrasive material consisting essentially of ferric oxide" as now recited in amended claims 1 and 6 is fully supported in the original disclosure, particularly from page 10, line 27 to page 11, line 2 of the specification. Thus, no new matter has been entered into the disclosure by way of the amendment to claims 1 and 6.

Independent claims 1 and 6, as amended, are not rendered obvious by the cited references because neither the EP 1084785 patent nor the JP 2001079749 patent, whether taken alone or in combination, teach or suggest an iron component or hard disk drive having the features discussed above and recited in independent claim 1 and 6. Accordingly, claims 1 and 6, as amended, patentably distinguish over the prior art and are allowable. Claim 2 being dependent upon claim 1 is thus allowable therewith. Consequently, the Examiner is respectfully requested to withdraw the rejection of claims 1, 2, and 6 under 35 U.S.C. § 103(a).

In view of the above, it is respectfully submitted that this application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance issued. If the Examiner believes that a telephone conference with Applicant's attorneys would be advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned.

Respectfully submitted,



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Enclosure (Reference Figure)